

What is claimed is:

1. A method to provide electrical pulses to one or both vagus nerve(s) of a patient to provide therapy for at least one of obesity, eating disorders,
5 comprising the steps of:
 - a) providing at least one implanted stimulator, wherein said implanted stimulator comprising an implanted pulse generator module and an implanted stimulus-receiver module;
 - b) providing an external stimulator adapted to be inductively coupled to
10 said implanted stimulus-receiver module; and
 - c) providing at least one implanted lead in electrical contact with said implanted stimulator, and at least one electrode in contact with said vagus nerve(s).
- 15 2. Method of claim 1, wherein said implanted stimulator further comprises controlling means for selectively operating one of said implanted pulse generator module and said implanted stimulus-receiver module.
- 20 3. Method of claim 1, wherein said electrical pulses are applied at any level along the length of said vagus nerve(s) and its branches.
4. Method of claim 1, wherein said electrical pulses are applied on the vagus nerve(s) at a level above the diaphragmatic level in a patient.
- 25 5. Method of claim 1, wherein said electrical pulses are applied on the vagus nerve(s) at a level below the diaphragmatic level in a patient.
6. Method of claim 1, wherein said electrical pulses are applied with two separate said implanted stimulators to said both (left and right) vagus
30 nerve(s).

7. Method of claim 1, wherein said electrical pulses are applied with one said implanted stimulator to said both (left and right) vagus nerve(s).
8. Method of claim 1, wherein said electrical pulses comprises at least one variable component selected from the group consisting of the current output, pulse width, pulse frequency, pulse amplitude, and on-off timing sequence.
9. Method of claim 1, wherein said implanted stimulator is programmed with an external programmer.
10. Method of claim 1, wherein said implanted stimulator is programmed with a magnet.
11. Method of claim 1, wherein said external stimulator is wirelessly networked with bi-directional communications.
12. Method of claim 11, wherein said bi-directional communications is used for at least one of patient billing and invoicing, patient monitoring and management, communicating with other computers and the like.
13. Method of claim 1, wherein said external stimulator further comprises telemetry means to remotely control said electrical pulses delivered by said external stimulator to a patient.
14. Method of claim 1, wherein said implanted stimulator further comprises rechargeable power source capable of being recharged via an external power source.
15. A method of providing pulsed electrical stimulation to one or both vagus nerve(s) of a patient near the diaphragmatic region, for providing therapy

for at least one of neurological disorders, neuropsychiatric disorders, obesity and eating disorders, comprising the steps of:

- 5 a) providing at least one implanted stimulator, wherein said implanted stimulator comprises an implanted pulse generator module and an implanted stimulus-receiver module;
 - b) providing an external stimulator for inductively coupling to said implanted stimulus-receiver module;
 - c) providing controlling means for selectively operating one of said implanted pulse generator module and said implanted stimulus-receiver module;
 - 10 and
 - d) providing at least one implanted lead in electrical contact with said implanted stimulator, and at least one electrode in contact with said vagus nerve(s),
- whereby electric stimulation is provided to said vagus nerve(s).

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- 16. Method of claim 15, wherein said neurological disorders and neuropsychiatric disorders comprises at least one of partial complex epilepsy, generalized epilepsy, involuntary movement disorders caused by Parkinson's disease, migraines, neurogenic pain, depression, Alzheimer's disease, anxiety disorders, obsessive compulsive disorders, and the like.

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- 17. Method of claim 15, wherein said external stimulator is utilized to determine optimal dosage of said pulsed electrical stimulation to be provided to a patient.

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- 18. Method of claim 15, wherein said pulsed electrical stimulation comprises at least one variable component selected from the group consisting of current output, pulse width, pulse frequency, pulse amplitude and on-off timing sequence.

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- 19. Method of claim 15, wherein said implanted stimulator is programmed with an external programmer.

20. Method of claim 15, wherein said implanted stimulator is programmed with a magnet.

5 21. Method of claim 15, wherein said external stimulator is wirelessly networked with bi-directional communications.

22. Method of claim 21, wherein said bi-directional communications is used for at least one of patient billing and invoicing, patient monitoring and
10 management, communicating with other computers, global positioning system for patient location and the like.

23. Method of claim 15, wherein said external stimulator further comprises telemetry means to remotely control said electrical pulses delivered by
15 said external stimulator.

24. Method of claim 15, wherein said implanted pulse generator further comprises rechargeable power source capable of being recharged with an external power source.

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25. A system for providing electrical pulses to one or both (left and right) vagus nerve(s) of a patient to provide therapy for at least one of obesity and eating disorders, comprising:

a) at least one implantable stimulator, wherein said implanted stimulator
25 comprising a pulse generator module and a stimulus-receiver module;

b) an external stimulator adapted to be inductively coupled to said stimulus-receiver to provide electrical pulses;

c) controlling means to selectively operate one of said implanted pulse generator module and said stimulus-receiver module; and

30 d) at least one implanted lead with at least one electrode in contact with said vagus nerve(s);

whereby said pulsed electrical stimulation is provided to said vagus nerve(s).

26. System of claim 25, wherein said electrical stimulation is applied at
5 any level along the length of said vagus nerve(s) and its branches.

27. System of claim 25, wherein said electrical pulses are applied to said vagus nerve(s) at above the level of the diaphragm in a patient.

10 28. System of claim 25, wherein said electrical pulses are applied on said vagus nerve(s) at below the level of diaphragm in a patient.

29. System of claim 25, wherein said electrical pulses are applied with separate said implanted stimulators to said left and right vagus nerves.
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30. System of claim 25, wherein said electrical pulses are applied to both left and right vagus nerves with one said implanted stimulator.

31. System of claim 25, wherein said pulsed electrical stimulation
20 comprises at least one variable component selected from the group consisting of the current output, pulse width, pulse frequency, pulse amplitude and on-off timing sequence.

32. System of claim 25, wherein said implanted stimulator is
25 programmed with a magnet.

33. System of claim 25, wherein said implanted stimulator is programmed with an external programmer.

30 34. System of claim 25, wherein said external stimulator is wirelessly networked with bi-directional communications.

35. System of claim 34, wherein said bi-directional communications is used for at least one of patient billing and invoicing, patient management and monitoring, communicating with other computers, and global positioning system for patient location.

36. System of claim 25, wherein said external stimulator further comprises telemetry means for remotely controlling said electrical pulses that are delivered by said external stimulator.

37. System of claim 25, wherein said implanted pulse generator further comprises rechargeable power source capable of being recharged via an external power source.

38. A system to provide electric pulses near the diaphragm region to one or both vagus nerve(s) of a patient to provide neuromodulation therapy for at least one of neurological disorders, neuropsychiatric disorders, obesity and eating disorders, comprising:

- a) at least one implantable stimulator, wherein said at least one implanted stimulator comprising a stimulus-receiver module, and a pulse generator module;
 - b) an external stimulator for inductively coupling to said stimulus-receiver;
 - c) controlling means to selectively operate one of said pulse generator module and said stimulus-receiver module; and
 - d) at least one implanted lead with at least one electrode in contact with said vagus nerve(s),
- whereby said system provides said therapy.

39. System of claim 38, wherein said pulsed electrical stimulation comprises at least one variable component selected from the group consisting of the current output, pulse width, pulse frequency, pulse amplitude and on-off timing sequence.

40. System of claim 38, wherein said implanted stimulator is programmed with a magnet.

5 41. System of claim 38, wherein said implanted stimulator is programmed with an external programmer.

 42. System of claim 38, wherein said neurological and neuropsychiatric disorders comprises partial complex epilepsy, generalized epilepsy, involuntary
10 movement disorders caused by Parkinson's disease, migraine, neurogenic pain, depression, Alzheimer's disease, anxiety disorders, obsessive compulsive disorders, and the like.

 43. System of claim 38, wherein said external stimulator is wirelessly
15 networked for bi-directional communications.

 44. System of claim 43, wherein said bi-directional communications is used for at least one of patient billing and invoicing, patient management and monitoring, communicating with other computers, and global positioning system
20 for patient location.

 45. System of claim 38, wherein said external stimulator further comprises telemetry means for remotely controlling said electrical stimulation programs that are delivered by said external stimulator.

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 46. System of claim 38, wherein said implanted pulse generator further comprises rechargeable power source capable of being recharged via an external power source.

30 47. Method of providing electrical pulses to one or both vagus nerve(s) and its branches in a patient, comprising the steps of:

a) providing at least one implantable stimulator, wherein said implanted stimulator comprising a pulse generator module and a stimulus-receiver module;

b) providing an external stimulator for inductively coupling to said stimulus-receiver and further comprising means to be wirelessly networked for bi-

5 directional communications for at least one of patient billing and invoicing, patient management and monitoring, communicating with other computers, remotely controlling said electrical pulses delivered by said external stimulator to a patient, global positioning for patient location and like;

c) providing controlling means to selectively operate one of said implanted
10 pulse generator module and said stimulus-receiver module; and

d) providing at least one implanted lead with at least one electrode in contact with said vagus nerve(s),

whereby said electric pulses neuromodulate said vagus nerve(s).

15 48. Method of claim 47 wherein said electric pulses are provided to said vagus nerve(s) for therapy for at least one of neurological disorders, neuropsychiatric disorders, obesity and eating disorders.